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ABSTRACT

This paper discusses a vision of the transformation of the library from a repository of printed material to a digital library serving as a complete information center where distant learners can obtain support for their educational aspirations. Future information centers will be distant learner-centered. Factors discussed include: (1) distance learning and educational unification; (2) the library and mastery of a shared body of knowledge; (3) public pressure for library transformation through technology; (4) the realization of public interest; (5) future challenges to library transformation, including the growth of the World Wide Web, copyright and fair use issues, electronic mail, and electronic publications; (6) the future library as an information center; and (7) the future role of librarians as information specialists. Whether or not libraries will be transformed into the digital library of the future is dependent on technology and information issues. Future librarians as information specialists must learn new technologies and skills, and keep pace with technological developments in distance learning, in order to realize the transformation of the library into the future information center and to meet the increasing demands of distant learners. (Contains 12 references.) (SWC)

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Headnote

Traditional concepts and methods of educating are being radically altered as opportunities for personal enrichment expand through technologically sophisticated distance learning endeavors. The transformation of the library from a repository of printed material to a digital library serving as a complete information center where distant learners in this dynamic environment can find support for their educational aspirations is discussed.

Title

Distance Learning and the Digital Library:
Transforming the Library Into an Information Center

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Distance Learning and Educational Unification.

Distance learning continues to proliferate and expand educational opportunities. The rapid development of information technology now permits service delivery options for distance learning previously unimaginable (Bates, 1995; Miller & Wolf, 1992) and the wealth and sophistication of telecommunications options available today is radically altering traditional concepts and methods of educating (Hammer, 1994). Through technology, distance learning enhances opportunities for interaction, cooperative learning, and the formation of communities of learners rather than relying on traditional face-to-face lecture and query instructional strategies. Distance learning is a means of creating educational unification;

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connecting people who may be physically, socially, and/or culturally distant from each other, but who are unified in active learning communities by mastery of a shared body of knowledge and common educational goals and aspirations.

The Library and Mastery of a Shared Body of Knowledge.

Traditionally, the library has supported learners in their efforts to achieve mastery of a shared body of knowledge through three mechanisms: 1) access to printed material and a limited selection of other media such as records and films; 2) assistance in the search for appropriate printed material related to specific topics of interest; and 3) retrieval of printed material for the learner's use. As a repository of printed material, however, the traditional library was challenged in performing these functions because it was largely place- and time-bound, i.e., providing access to a collection of printed material at a specific site during established hours of operation or through relatively time-consuming inter-library loan services. No matter how finely honed the search skills of the librarian or student, access was limited by factors influencing the magnitude of the collection, such as budget or the interests of faculty and library book buyers, and retrieval was limited to the specific site or burdened by the time required to process interlibrary loan requests. With the exception of relatively limited telephone services, travel to the library location was necessary to obtain any service at all.

Public Pressure for Library Transformation through

Technology. Representative surveys on library usage suggest that library patrons--including distant learners--are interested in technology and the use of computers as means to pursue knowledge. As early as 1978, a Gallup Survey on library usage suggested that 56% of library patrons were interested in having the library offer computers to search for information or books. In 1987, library patrons were similarly more likely than non-visitors to think having a home computer would be useful. Survey results in 1991 indicated that library patrons were more likely to own a home computer than non-visitors, while online services to gather information were considered to be very valuable resources by library patrons and non-visitors alike. This assessment was most prevalent among college graduates, but people who had not completed high school also indicated substantial interest in using the technology to access information. In addition, people in poverty and minorities were among those most likely to value the use of home computers for information (Westin & Finger, 1991). Such broadly based evidence of interest in using the technology to access information and acquire knowledge has been one source of pressure for library transformation.

The Realization of Public Interest. As access to more information through electronic means continues to increase, the public's interest in technology as a means to master knowledge is being realized. The traditional reliance on print media is being gradually eroded and the learning environment is becoming more and more technologically diverse and complex. The educational

goals and aspirations of distant learners must be supported through expanded and technologically sophisticated services that will not only identify information sources, but also develop them.

Just as the Internet and World Wide Web have eliminated the physical distance between many traditional repository libraries, in-home computers can eliminate the physical distance between the individual and the information's resident location. As physical distance is being minimized as a limitation in the acquisition of knowledge, the interactions between human and computer continue to be challenging and, for some humans, troubling. Fortunately, the technological environment is getting ever more user friendly. Searching World Wide Web sites using browsers such as Netscape provides users with precise search capabilities and access to multi-media and hypertext. The introduction of sound and pictures magnifies the educational experience and supports the varied learning styles of individual learners. As the relationship between humans and technologies continues to develop in supportive and exciting ways, both distance learning opportunities and information access will continue to expand and improve through the development of electronic learning modules at the information centers of the future (Murray, 1995).

However, there is presently a plethora of online information services, and as access continues to grow at a rate, so does its complexity. The challenge presently faced by distant learners pursuing knowledge is not how to access some or enough

information, but how effectively to use and manage existing technologies to limit access. Acquiring only the most relevant information, or at least a manageable amount of information, to facilitate the process of transforming data and information into mastery of a shared body of knowledge is a continual challenge for learners.

Future Challenges to Library Transformation.

As distant learners are challenged to effectively use and manage technologies for distance learning, the current trends in library transformation and technology development will persist. The Internet will continue to provide an unparalleled state of world-wide connectivity among diverse people and access to it will increasingly extend to people in their homes, vehicles, post offices, information centers, malls, offices and educational centers. Libraries and other resources online will be challenged to provide more comprehensive services to more broadly based and active learning communities that will arise through expanded distance learning opportunities.

The World Wide Web, using hypertext and multimedia, will continue to grow and become a major publishing medium. The writer's traditional reliance on the word will be challenged to meaningfully incorporate visual images, motion, and auditory stimuli to enhance the impact of the communication. Individuals will increasingly be able self-publish their views on the Internet, more broadly than ever before and far more accessible to others than traditional printed media. World Wide Web

celebrities will arise and be known world-wide for their work.

Current legal principles of copyright and fair-use will be challenged and revised. Libraries presently provide a mechanism to control access and distribution of copyright protected materials (Gasaway & Wiant, 1994). With advances in technology, the ability of users to access, download, and manipulate online information for personal, professional, and academic purposes will require alternative mechanisms to establish control of digital text (Bloch & Hesse, 1993). With a profusion of self-publication through the World Wide Web and increasing numbers of periodicals available online, it is anticipated that the period of time before texts enter the public domain will be shortened.

The ability to receive vast amounts of electronic mail as well as online periodical publications everyday will require that the ability to screen and sort incoming information and will continue to be a major area of technology development. The distant learner's ability to separate the wheat from the chaff and identify the information worthy of attention as educational goals and aspirations are pursued will be an increasingly important skill in distance learning.

The Future Library as Information Center.

The future library as information center will have an expanded role in providing educational activities, services, materials and opportunities for human interaction. The library will provide technology and information literacy training as well as training in critical thinking skills, the process of selecting and using

information to create new and master existing knowledge. The library will also develop customized multimedia learning modules to present these educational services to faculty and distant learners on demand through distance learning or in face-to-face onsite or online interactive learning environments.

Future libraries will continue to incorporate existing and improved technologies in new and creative ways. An example is the scanning technology most commonly utilized today in the fax machine. Currently, scanning technology can take up to a minute to digitize a printed page. In the future, scanning speed will improve and scanners will be used, not only to digitize printed material, but also to deliver information directly to the distant learner's personal computer. Scanners will also be used to search by key words or phrases within electronic texts of books and databases to make published works available for study electronically. This vision of the future is presently being realized by the success of Project Gutenberg, which has made full text copy of a large number of classic, religious and children's books, poetry and historical documents available electronically (Crawford & Gorman, 1995). Library production of customized materials and direct delivery of these materials to distant learners through enhanced technology will increase the number of people using the services and expand participation in future learning communities.

The future information centers will be distant learner-centered and these distant learners will be more broadly

representative of the world's diversity: elder and youthful learners; well-educated and less-well-educated learners; learners who live, or have lived, in poverty and those who are materially well-endowed; and minority and non-minority learners (Riggs & Sabine, 1988). This expanded diversity in learning communities will allow the library as future information center to realize more fully its historic role as a social institution created to provide equitable access to knowledge in a free society (Scholars and Research Libraries, 1990).

The future information center will not be place- or time-bound. Multi-user access to databases and reference materials such as dictionaries and government documents online will improve user access. Reference collections and other services will be available 24 hours a day, as will online reading rooms providing access to periodicals and journals. Use of online study rooms, descendants of e-mail "chat" rooms, will be expanded and increase online interaction within distant learning communities. Distant learners and librarians alike will be able to fully work from a remote location. Traditional research, reference and print support of curriculum development in educational centers will incorporate multimedia to benefit individual learning styles and technology advances in interactive online environments such as C-U-See Me will make online communication among distant learners or between distant learners and librarians more personal.

Despite increasing personalization of communications online

and increasing technological sophistication in interactive distance learning, the human need and desire for face-to-face communication in proximity will be recognized by these future information centers. They will provide facilities for distant learners to gather, with or without their machines, for learning and social exchanges in support of the development of enriched learning, social and cultural communities.

The Future Role of Librarians as Information Specialists. As the digital library is transformed into the future information center, so will the role of the librarian be radically transformed. It will change from the traditional search and retrieve experts and increase in responsibility: to provide guidance in the use of technology, to access information from varied locations (Bloch & Hesse, 1993,) and to collaborate with faculty to develop learning opportunities for distant learners (Murray, 1995).

Through technology innovation, future information specialists will work more closely with faculty and distant learners to provide materials and reference as well as instructional services either on- or offline. This greater collaboration will contribute to the trend to develop academic teams of library personnel, faculty and distant learners, which will facilitate distance and cooperative learning, and influence librarians in their work (Riggs & Sabine, 1988). Librarians have already demonstrating the ability to embrace new opportunities to redefine their roles and take a proactive stance and grasp the

technological innovations that are so rapidly changing their libraries (Latham, 1991). However, information specialists will encounter mounting tension between pressure from distant learners for more information faster and pressure to sift and winnow an over-abundance of information. It will be important for these future information specialists to remain committed to assisting in information selection without restricting access to information based on personal opinions or preferences.

Library Transformation: To Be or Not to Be.

Futures are unpredictable and ambiguity surrounds the realization of the digital library transformation envisioned in this article. Present library personnel and administrators struggle daily with a myriad of unanticipated developments, emerging technological advances, and various operating and policy concerns that may either hinder, facilitate, or radically alter library transformation. It is important to identify some of the challenges that current library personnel and administrators presently face in realizing the digital library of the future in the long run.

Technology Issues. There is a continuing debate among leaders in library administration about how to realize library transformation in an environment of such great uncertainty. How much reliance should remain on printed media? How will the preservation of electronic information be achieved in the face of system failure? How much space (physical or digital) should be devoted to storing information and for how long?

The continued free access envisioned in library transformation in this article may be inhibited by political, social, and cultural concerns emerging about the Internet. More and more frequently people are expressing concern about the content of information available on the Internet and a desire to achieve control over that content and access to it. Just how successful attempts to regulate the Internet will be is not known, but legislation is pending at the federal level targeted at some of these concerns. The magnitude of regulation that will be achieved, the ability to enforce regulatory attempts, or how such regulations will ultimately influence the digital library of the future are also unknowns.

Information Issues. As raised previously, traditional copyright policies and enforcement mechanisms are anticipated to be altered. However, even broader questions about knowledge production and ownership are being raised and the future resolution of these questions can not presently be determined. Access to information and the ability to readily alter information challenge traditional concepts of knowledge production and ownership.

These worrisome scenarios are indicative of the magnitude of social and political concerns surrounding technological advances. The economic concerns that seem so troubling now, on the other hand, can gradually be resolved over time because the costs associated with technology have consistently declined. However, if regulation or new policies become burdensome, technological

advances would be slowed and the realization of the information center of the future would be delayed.

Future librarians as information specialists must be prepared to do their part to realize the transformation of the digital library into the future information center to meet the increasing demands of distant learners. Only by learning these new technologies and skills--such as World Wide Web/Internet instructional design--and keeping pace with new technological developments in distance learning, can future information specialists accomplish this. The success of future information centers depends on it.

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